Does the Treatment of Sleep Apnea Improve the Sexual Performance in Men with Obstructive Sleep Apnea Syndrome?

Obstruktif Sleep Apneli Erkeklerde Apne Tedavisi Seksüel Performansı İyileştirir mi?

Obstructive Sleep Apnea Syndrome? / Obstructive Sleep Apnea Syndrome

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Özet

Amaç: Ereksiyon bozukluğu olan erkeklerde obstruktif uyku bozukluğunun tedavi edilmesinin seksüel performans üzerine olan iyileştirici etkisini araştırmayı amaçladık. Gereç ve Yöntem: Ereksiyon bozukluğu ve obstruktif uyku bozukluğu ile başvuran 141 hasta için IIEF (uluslararası ereksiyon indeksi) formu doldurduldu ve uyku laboratuvarında değerlendirildi. Bütün hastaların kulak burun boğaz muayenesi yapıldı. Cerrahi ve CBAP(continuous positive airway pressure) tedavisi yapılan hastalar apne-hipopne indeksine (AHI) göre değerlendirildi. Erken dönem 3. ayda apne tedavisi ve sonuçları tamamlanan 23 hastaya IIEF formları tekrar doldurtularak skorlaması yapılmıştır Hastaların yaşları 26 ile 65 arasında değişmekteydi. Tedavi öncesi ve sonrasındaki IEEF skorundaki farklılıkların değerlendirilmesinde Wilcoxon signed ranks, Kruskal Wallis, Spearman's rho testleri kullanıldı. Bulgular: IIEF skorunda anlamlı düzelme tespit edilen 23 hastanın tedavi öncesine göre IIEF skorlarındaki düzelmenin istatistiksel olarak anlamlı olduğu izlendi (p<0.001). Tedavi öncesi ve sonrasında IIEF puanlarındaki değişim ile AHİ, tedavi yöntemi, hasta yaşı ve vücut kitle indeksi arasında anlamlı bir ilişki saptanmamıştır (p> 0.05). Tartışma: Uyku apnesi yakınması olan hastalarda seksüel performansta da gerileme olabileceği ve apne tedavisi ile performansta belirgin bir düzelme olduğu saptanmıştır.

Anahtar Kelimeler

Seksüel Performans; Uyku Apnesi; Tedavi

Abstract

Aim: We aimed to investigate the effect of obstructive sleep apnea treatment on sexual performance in the case of obstructive sleep apnea in men with erectile dysfunction. Material and Method: IIEF (international index of erectile function) form was filled for 141 male patients who admitted with obstructive sleep apnea and with erectile dysfunction and investigated in polysomnography laboratory. All patients were examined at ENT (Ear Nose and Throat) clinic. Patients in the treatment of surgery and CBAP (continuous positive airway pressure) were evaluated according to the apnea-hipopne index (AHI). Preliminary report has been done at the 3. month after the OSAS(Obstructive Sleep Apnea Syndrome) therapy for the 23 patients. IIEF form was filled again and symptom scoring has been updated for 23 patients who could be followed after sleep apnea treatment. The age of these patients ranged from 26 to 65 years. Wilcoxon signed ranks, Kruskal Wallis, and Spearman's rho tests were used to evaluate differences in IIEF scores before and after the treatment. Results: Significant improvement were confirmed at IIEF scores of 23 patients with obstructive sleep apnea who could be followed and treated statistically (p<0.001). The difference in IIEF scores before and after treatment were not associated with AHI, treatment methods, patient age and BMI (p>0.05). Discussion: Sexual performance may decline in patients with obstructive sleep apnea and a significant improvement was detected on sexual performance with apnea treatment in this group of patients.

Keywords

Sexual Performance; Sleep Apnea; Treatment

DOI: 10.4328/JCAM.834 Received: 16.10.2011 Accepted: 23.11.2011 Printed: 01.01.2013 J Clin Anal Med 2013;4(1): 9-12
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Introduction

Obstructive sleep apnea (OSA) is the most prevalent sleep disorder affecting 2.2–4.8% of men [1]. It is characterized by periods of functional obstruction of the upper airway during sleep, resulting in decreases in arterial oxygen saturation and transient arousals. The major symptoms associated with OSA are excessive daytime sleepiness and loud snoring, fatigue, gasping, nocturia, nocturnal sweating, morning headaches, heartburn and erectile dysfunction [2-7]. In this study our starting point was to point out whether if the sexual performance of sleep apne patients is affected or not. The second point was to show whether if the sexual performance improved after the sleep apnea therapy.

Material and Method

All patients were signed consent forms in order to participate in the study. Polysomnographic study was performed during two consecutive nights and CPAP titrations were done another day. At least 7 hours of sleep was recorded. Patients were also performed electroencephalography (EEG), electroculography (EOG), electromiyography (EMG) and electrocardiography (ECG). Inhalation of the patients was followed up with a nasal cannula. Polysomnography results were evaluated according to the classification criterias of the American Sleep Academy. Respiratory arrest for at least 10 seconds or more was defined as apnea, while reduction of the 50% of breathing for at least 10 seconds was defined as hypopnea. Total of apnea and hypopnea episodes in one hour was considered as apnea-hypopnea index (AHI). Patients in our study were diagnosed as OSAS according to AHI and 5-14 was considered as mild, while 15-30 and > 30 were considered as moderate and severe, respectively [8].

IIEF-5 scoring was performed by a single urologist. High score means better erection function. Classification of ED (Erectile Dysfunction) was defined as follows: score between 5-7 as severe ED, score between 8-11 as moderate ED, score between 12-16 as mild-moderate ED, score between 17-21 as mild ED and score between 22-25 as normal erectile function [9]. All biochemical and hormonal analysis were done and patients with abnormal values were excluded. Patients who had nitrate using, hormonal disorder, neuropathical and neurological disease, prostate cancer, pelvic trauma history, renal transplantation surgery, aortic aneurysm, spinal cord injury, endocrine disorder, penile deformity, alcohol dependence, psychotropic drug use, acute and chronic psychiatric illness, chronic disease, cardiovascular disease and metabolic disease were excluded from the study.

All patients were examined at Ear Nose and Throat (ENT) clinics. Surgery (UPF:uvuloplatal flep), radiofrequency ablation (RF) of the soft palate or continuous positive airway pressure (CPAP) treatment was recommeneded according to apne-hipopne index (AHI: Apnea and Hypopnea instances per hour) and examination of patients. The third month results of 23 patients of these 141 OSAS patients with poor sexual performance were recorded. Approval of our institutional research committee for this work is taken.

Statistical analysis

Statistical evaluation was applied on Windows SPSS-11.5. When scatter of data was examined on SPSS program, normality of data was controlled with tests and graphical scatter. As the scatter of data was not normal, Wilcoxon signed ranks, Kruskal Wallis tests and non-parametric tests were applied. Wilcoxon signed ranks, Kruskal Wallis tests and non-parametic statistics were used to evaluate differences in IIEF scores before and after the treatment. $p<0.001$ was considered as significant.

Results

Our study was initiated with a total of 141 patients. Of these 141, mean age was 46.34±21.2 years (26-84), mean height was 168.94±6.15cm, mean weight was 89.23±16.25 kg, mean BMI was 31.30±4.75 and mean AHI score was 58.5±21.7 (5.7-126.8). 85 patients (60.29%) were performed CPAP, 29 (20.56%) were performed UPF (uvuloplatal flap) surgery, 15 (10.64%) were performed RF (radiofrequency ablation) and 12 (8.51%) were performed of the IOD (intra-oral device-medical device for mouth breathing). We reported the early third month results of 23 patients. The final results of this ongoing study will be notified later.

The mean AHI of these 23 patients was 48.83 ± 32.52 and 4 had mild, 5 had moderate and 14 had severe OSAS according to AHI. 16 of them (69.56%) were performed CPAP, 5 were performed RF (21.73%) and 2 were performed UPF surgery (uvuloplatal flap surgery) (8.69%). Pre-treatment maximum, minimum and mean IIEF scores were 45, 20 and 32.43 ± 6.75, respectively. After the treatment, maximum, minimum and mean IIEF scores were 45, 36 and 33.95 ± 4.85, respectively. The difference between the IIEF scores before and after treatment was statistically significant ($p<0.05$). On the other hand, there was no statistically significant relationship between age, BMI, severity

Table 1. IIEF improvement with treatment in OSAS patients

	Scores before treatment	Scores after treatment	P value
Minimum	20	17	0.036
Maksimum	45	44	

Table 2. Mean values of age, height, weight and AHI of OSAS patients.

	Age	Height (cm)	Weight (kg)	AHI
Total	23	23	23	23
Mean	45.57	172.26	91.09	48.830
St. Deviation	10.786	5.754	15.150	32.523

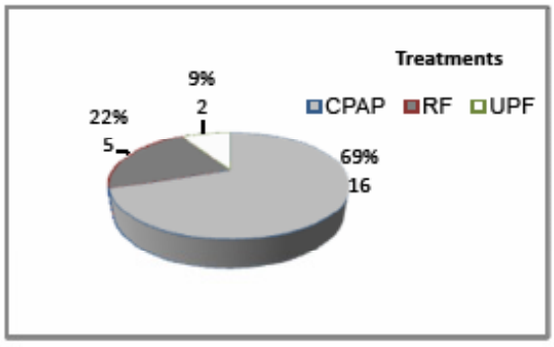
Table 3. The relationship between IIEF improvement, patient characteristics and treatment modalities.

	Age	BMI	Severity of disease	Treatment modality
Improvement of IIEF score before and after treatment (p value)	0.332*	0.968*	0.747*	5.544*

*p > 0 .05

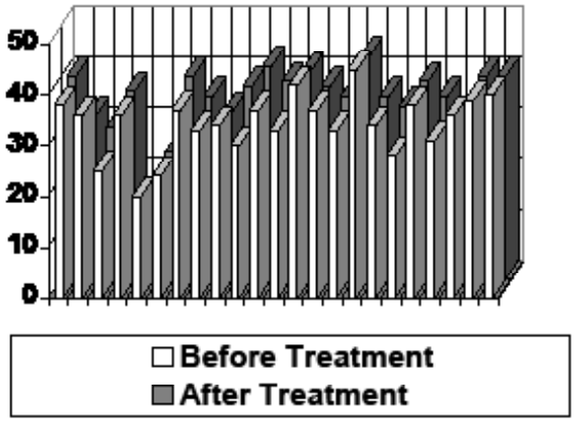
of the disease and treatment options (p>0.05) (Table 1,2,3 and Figure 2). Treatment modalities; determined by ENT inspection findings and disease severity; were shown in Figure1

Figure 1. Treatment modalities in OSAS.



CPAP: Continuous Positive Airway Pressure, RF:radyofrekans ablasyon, UPF: uvulopalatal flap (surgery)

Figure 2. IIEF scores before and after treatment.



Discussion

Obstructive sleep apnea syndrome is an important disease which develops due to reoccurring disorders (apnea, hypopnea) as a result of blocked upper air route during sleep [10]. Studies showed that there is a relationship between OSAS and sexual dysfunction [7]. In fact, sleep and erectile function, even in relation to each other very closely, are two intertwined functions. Nocturnal erection, which is important in erection patophysiology, prominently encompasses the REM phase of the sleep. Sleep-related nocturnal erections, called as Nocturnal Penile Tumescence (NPT), mainly occur in REM sleep [11]. Presence of high sympathetic activity in patients with OSAS, especially at night, could prevent the physiological mechanisms of normal erection [12]. Penile growth by filling of blood and increase in partial oxygen pressure occurs during the NPT. Therefore, NPT is believed to be an internal mechanism to protect morphological feature of corpora cavernous [13]. Men have 3-5 episodes of NPT per night, which take approximately 30-60 minutes [14].

On the other hand, some of the previous studies demonstrated that nocturnal LH and testosterone levels in patients with OSAS were significantly lower than the control group. The relationship between ED and pituitary-gonadal axis in sleep disorders was evaluated and showed that OSAS affects sexual performance and causes problems [15].Low plasma levels of nitric oxide (NO), an important vasodilator which plays role in the physiology of erection, is responsible for ED in patients with OSAS, as well as vascular diseases [16]. Additionally, it was shown that hypoxia increased the level of endothelin, a potent vasoconstrictor, in patients with OSAS [17]. Possible mechanisms explaining the relationship between erectile dysfunction and sleep disorder were summarized as follows: depending on exchange in the pituitary-gonadal axis leading to a decrease in LH, testosterone levels and increase in sympathetic activity, rising norepinephrine levels and peripheral nerve dysfunction, in association with nocturnal hypoxia, suppression of no production by oxidative stress, in response to acetylcholine and increased production of endothelin, leading to vasoconstriction and antagonizing penile tumescence [18].

OSAS can be defined according to apnea-hypopnea index. Apnea-Hypopnea Index is a parameter used in diagnosing OSAS which also indicates the severity of the disease as light AHI 5-14, mild AHI 15-30, strong AHI>30 [8]. In our study we have observed that there was a significant sexual performance increase for the patients coming in early phase 3rd month controls who, according to AHI have been diagnosed OSAS and who have received ASAS treatment (Surgery (UPF), RF of the soft palate or CPAP). However, no significant difference in terms of superiority of treatment options to each other may probably be due to lower number of patients in RF group. We hope that the number of patients in treatment groups will be sufficient for the evaluation of late-term results.

CPAP therapy and nocturnal hypoxemia (the lowest oxygen saturation measured at night) was determined the most significant variable with ED. Efficacy of CPAP may be occurring via increasing circulating levels of NO [19]. CPAP therapy also reduced the level endothelin by reducing hypoxia [4]. Significant improvements in erectile function with CPAP therapy in OSAS patients was first reported by Karacan and Karatas in 1995 [20]. On the other hand, in recent studies, significant improvements in erectile function with CPAP therapy have been reported significant post-treatment improvements in the lowest oxygen saturation and IIEF scores [21,22]. In our study, the majority of patients underwent CPAP therapy and then IIEF scores before and after treatment were compared and statistically significant difference was determined. In recent years, safety and efficacy of sildenafil treatment in erectile dysfunction of OSAS patients have been reported in studies [23,24]. The addition of parenteral testosterone therapy in patients with OSAS and hypogonadism have been reported more beneficial in improvement of erectile function [25].

In this pilot study, we observed that patients with OSAS and high AHI often had moderate and high IIEF symptom scores. We also detected that even only treating OSAS with no need for any

additional medical treatment may lead to a satisfactory sexual performance improvement. In our study, changes in IIEF scores in patients with OSAS before and after treatment and the relationship between age, body mass index, severity of disease (AHI) and treatment modalities was not statistically significant. Although minimum and maximum values of IIEF score before treatment were higher than after treatment values , median value was higher after treatment and this elevation was statistically significant.

It was detected that sexual performance can also be deteriorated and significant improvement in performance can be provided by the treatment of apnea in patients with sleep apnea in this study. We suggest that treatment of OSAS should be considered besides medical treatment for the improvement of sexual function in patients with OSAS with erectile dysfunction.

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